Notice of Allowability	Application No.	Applicant(s)	
	09/889,938	RICHARDS ET AL.	
	Examiner	Art Unit	
	Ashwin Mehta	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *papers filed 27 August 2004*.

2. ☒ The allowed claim(s) is/are *62-65,67,68 and 70-72*.

3. ☒ The drawings filed on *11 December 2001* are accepted by the Examiner.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *attached* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Claim Objections and Rejections

1. The rejection of claims 62-64, 66, and 69-72 under 35 U.S.C. 112, 2nd paragraph, is withdrawn in light of the claim amendments.

2. The rejection of claims 62-72 under 35 U.S.C. 103(a) is withdrawn in light of the claim amendments below and further consideration.

Examiner's Amendment

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Gwen Wood on September 30, 2004.

The application has been amended as follows:

In the claims:

Claim 62. A method for conveying resistance to beet necrotic yellow vein virus (BNYVV) to a sugar beet plant, comprising:

preparing a BNYVV DNA fragment consisting of a nucleotide sequence that corresponds to nucleotides 153 to 3258 of RNA1 of said virus[, wherein said nucleotides 153 to 3258 of RNA1 represent a 3' truncated sequence of BNYVV, and wherein a 5' end primer and a 3' end

primer are used to obtain the DNA fragment, said 5' end primer consisting of 5'-CGCGGATCCACCATGGCAGATTCGTTC-3' (containing a BamHI and NcoI restriction site and nucleotides identical to nucleotides 153-168) or 5'-GACGAATTCAAGTCGTCTTTC-3' (containing an EcoRI restriction site and nucleotides complementary to nucleotides 288-301); and said 3' end primer consisting of 5'-GACGAATTCGAAAGATGAGTCTA-3' (containing an EcoRI site and nucleotides identical to nucleotides 2799-2812) or 5'-CGCAGATCTTTAACTGCTCATCACCAAC-3' (containing a BglII site and nucleotides complementary to nucleotides 3244-3258); and stop codon];

introducing said DNA fragment, operatively linked to a promoter that is active in sugar beet plants, into a sugar beet plant cell to obtain a transformed sugar beet cell; and regenerating a transgenic sugar beet plant from the transformed sugar beet plant cell, said transformed sugar beet plant cell comprising in its genome at least two copies of the DNA fragment, wherein expression of said DNA fragment conveys resistance to BNYVV to said transgenic sugar beet plant.

Claim 64. A transformation vector for conveying resistance to BNYVV to a plant, comprising a BNYVV DNA fragment consisting of a nucleotide sequence [DNA fragment] that corresponds to nucleotides 153 to 3258 of RNA1 of said virus, and transcription and translation regulatory sequences operably linked therewith[, wherein said nucleotides 153 to 3258 of RNA1 represent a 3' truncated sequence of BNYVV, and wherein a 5' end primer and a 3' end primer are used to obtain the DNA fragment, said 5' end primer consisting of 5'-CGCGGATCCACCATGGCAGATTCGTTC-3' (containing a BamHI and NcoI restriction site

and nucleotides identical to nucleotides 153-168) or 5'-GACGAATTCAAGTCGTCTTTC-3' (containing an EcoRI restriction site and nucleotides complementary to nucleotides 288-301); and said 3' end primer consisting of 5'-GACGAATTCGAAAGATGAGTCTA-3' (containing an EcoRI site and nucleotides identical to nucleotides 2799-2812) or 5'-CGCAGATCTTTAACTGCTCATCACCAAC-3' (containing a BglII site and nucleotides complementary to nucleotides 3244-3258); and stop codon].

Claim 65. A transgenic sugar beet plant cell, exhibiting resistance to BNYVV, comprising in its genome at least two copies of a BNYVV DNA fragment consisting of a nucleotide sequence that corresponds to nucleotides 153 to 3258 of [comprising] RNA1 of said virus[, wherein a 5' end primer and a 3' end primer are used to obtain the DNA fragment, said 5' end primer consisting of 5'-CGCGGATCCACCATGGCAGATTCGTTC-3' (containing a BamHI and NcoI restriction site and nucleotides identical to nucleotides 153-168) or 5'-GACGAATTCAAGTCGTCTTTC-3' (containing an EcoRI restriction site and nucleotides complementary to nucleotides 288-301); and said 3' end primer consisting of 5'-GACGAATTCGAAAGATGAGTCTA-3' (containing an EcoRI site and nucleotides identical to nucleotides 2799-2812) or 5'CGCAGATCTTTAACTGCTCATCACCAAC-3' (containing a BglII site and nucleotides complementary to nucleotides 3244-3258): and stop codon].

Claim 66 was cancelled.

Claim 68. A transgenic sugar beet plant exhibiting resistance to BNYVV, comprising plant cells having in their genome at least two copies of a BNYVV DNA fragment consisting of a nucleotide sequence that corresponds to nucleotides 153 to 3258 of RNA1 of said virus, and transcription and translation regulatory sequences operably linked therewith [comprising RNA1 of said virus, wherein a 5' end primer and a 3' end primer are used to obtain the DNA fragment, said 5' end primer consisting of 5'-CGCGGATCCACCATGGCAGATTCGTTC-3' (containing a BamHI and NcoI restriction site and nucleotides identical to nucleotides 153-168) or 5'-GACGAATTCAAGTCGTCTTTC-3' (containing an EcoRI restriction site and nucleotides complementary to nucleotides 288-301); and said 3' end primer consisting of 5'-GACGAATTCGAAAGATGAGTCTA-3' (containing an EcoRI site and nucleotides identical to nucleotides 2799-2812) or 5'-CGCAGATCTTTAACTGCTCATCACCAAC-3' (containing a BglII site and nucleotides complementary to nucleotides 3244-3258); and stop codon].

Claim 69 was cancelled.

In claim 70, line 4, the recitation, "comprising RNA1 of said virus" was deleted.

In claim 71, line 1, the recitation, "The seeds" was replaced with --Seeds--; and in line 4, the recitation, "comprising RNA1 of said virus" was deleted.

In claim 72, line 1, the recitation, "The vegetatively" was replaced with --Vegetatively--.

In the abstract:

The abstract was amended as follows:

The present invention relates to a method for conveying resistance to beet necrotic yellow vein virus (BNYVV) to a sugar beet plant, which method comprises the following steps: (a) preparing [nucleotides in a sequence that is essentially] a DNA fragment consisting of a nucleotide sequence that corresponds to nucleotides 153 to 3258 [of at least 15 nucleotides homologous to the corresponding nucleotide sequence] of the genomic RNA 1 of the beet necrotic yellow vein virus (BNYVV); (b) introducing said DNA fragment, operatively linked to a promoter that is active in sugar beet plants, into a sugar beet plant cell to obtain a transformed sugar beet cell; and (c) regenerating a transgenic sugar beet plant from the transformed sugar beet plant cell.

4. Claims 62-65, 67, 68, and 70-72 are allowed.

5. The following is an examiner's statement of reasons for allowance: Applicants have developed a method to confer resistance to sugar beet plants against beet necrotic yellow vein virus (BNYVV). The method comprises transforming sugar beet plant cells with a construct comprising a promoter operably linked to a DNA fragment consisting of a nucleotide sequence that corresponds to nucleotides 153-3258 of RNA1 of BNYVV, and regenerating transgenic plants from the transformed cells. The specification teaches that transgenic plants comprising a

single copy of the introduced DNA remained susceptible to BNYVV, whereas transgenic plants comprising two or more copies showed resistance. Nucleotides 153-3258 are from the portion of BNYVV RNA1 that encodes the viral replicase. Baulcombe (Plant Cell, 1996, Vol. 8, pages 1833-1844) discusses the successful expression of viral replicase genes and portions of viral replicase genes in transgenic plants to confer resistance against the virus from which the gene was derived. In some examples, the resistance was conferred through RNA-mediated homology-dependent resistance, and in other examples the resistance was protein-based. However, while the prior art discusses the expression of sequences from plant viral genes in transgenic plants, to confer resistance against that virus, the prior art does not teach or fairly suggest the expression of specifically nucleotides 153-3258 of RNA1 of BNYVV to confer viral resistance.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this or earlier communications from the Examiner should be directed to Ashwin Mehta, whose telephone number is 571-272-0803. The Examiner can normally be reached from 8:00 A.M to 5:30 P.M. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Amy Nelson, can be reached at 571-272-0804. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications. Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within

5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

October 1, 2004

Ashwin D. Mehta, Ph.D.
Primary Examiner
Art Unit 1638